Foreword

The attached Standard Operating Procedure is the internal policy of the Land Quality Division of the Wyoming Department of Environmental Quality covering the topic of interpretation of blasting regulations in Chapters 2 and 6 of the Coal Rules and Regulations. Staff shall make no significant deviations from this policy without the prior approval of the District Supervisor and the Administrator.

Signed this _____ day of _____, 2000

Richard A. Chancellor
Administrator
Land Quality Division

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COAL
STANDARD OPERATING PROCEDURE NO. 6.2

Land Quality Division

SUBJECT: Blasting Regulations, Chapters 2 and 6 of the Land Quality Coal Rules and Regulations

I. Introduction

The purpose of this document is to provide guidance for interpretation and clarification of the blasting regulations in Chapters 2 and 6 of the Land Quality Coal Rules and Regulations.

II. Chapter 2 - Permit Applications

A. Chapter 2, Section 2(b)(v)(A)(I)and(II)

This section of the Coal rules requires that each application for a surface coal mining permit shall contain a blasting plan describing and illustrating the most difficult blasting conditions found on the mine. The plan shall include the pattern burden and spacing, hole depth, hole diameter, powder column, stemming depth, decking depth (if used), number of holes, delay

pattern, pounds of explosive per 8 millisecond delay, and total pounds of explosive per hole. These data shall be provided for both coal and overburden.

B. Chapter 2, Section 2(b)(v)(B)

This section of the Coal rules requires the operator to provide a detailed description of protection of any "dwelling, public building, school, church, community, or institutional building" that may be within 1000 feet of a blast. The description should specify how such structures will be protected from ground vibration, air blast, and flyrock.

C. Chapter 2, Section 2(b)(v)(C)

This section of the Coal rules requires that the operator provide a "description and location of blasting, monitoring, warning and site access control equipment and procedures."

D. Chapter 2, Section 2(b)(v)(D)

A sample blast record should be included in the permit.

E. Chapter 2, Section 2(b)(v)(E)

A sample copy of the public notice required by Chapter 6, Section 3 and a listing of who will receive the notice should be included in the permit. The discussion should also detail the length of, and procedures for, publication.

III Chapter 6 - Blasting for Surface Coal Mining Operations

A. Chapter 6, Section 1(b)

1. This section specifies that all blasts containing *more* than five pounds of explosives or blasting agent shall be conducted according to the schedule required under Chapter 6, Section 3 (Public Notice of Blasting Schedule). This means that blasts containing *less* than five pounds do not have to fall under the time constraints, access control, warning and all clear signals, etc. that other shots must comply with in Section 3.

2. Shots *under* five pounds must comply with all other sections of Chapter 6. This means that **all shots** must be: under the direct supervision of a certified blaster (Section 1(c)(i) & (ii)); conducted to prevent injury to persons or damage to property outside the permit area, etc. (Section 4(a)(i)(v)(vi) and (b)(i) thru (v)); and properly recorded (Section 5(a)(i) thru (xv)).

3. All shots shall be under the direct supervision of a certified blaster and proper records must be kept for every shot, no matter how small. Shots *under* five pounds are only exempt from the items discussed in Chapter 6, Section 3.

B. Chapter 6, Section 3(a)

1. A description should be included in the permit to address the requirements of this section. The publication date is 30 to 60 days prior to blasting. The critical time is 30 days prior. No blasting should occur until 30 days following publication. To assure compliance with the 30 days, the permittee should specify the time period by months to be covered. Since the republication time frame is a one-year period, this specification should not be a problem. If no dates are given for the effective time of publication, the 12 month period will start from the date of publication. The company will then have to republish at least every twelve months. Any revisions (such as adding lands, changing shooting times, etc.) to the notice must follow the 30 day non-blasting period following publication. The blasting areas described should be limited to the pit areas affected for the publication period.

2. To achieve consistency, LQD suggests that the public notice follow the sample given below. The wording and description may vary between mines, but the structure and subjects listed should be the same.

Sample Public Notice of Blasting Schedule

In accordance with Chapter 6, Section 3 of the Wyoming Department of Environmental Quality, Land Quality Division Coal Rules and Regulations,

(i). Wyoming Coal Company
P.O. Box 1 (operator's address)
Nowhere, Wyoming 77777
(307) 555-5555 (operator's phone)

announces its intention to detonate explosives during its mining operations at its (mine name, permit number), located in (Township, Range, Section) in (County) in the State of Wyoming.

(ii). Blasting will occur at the following locations:

List pit numbers, divisions (i.e. cuts, seams,etc.) and legal description of Section, Township, Range, and divisions of sections if entire section will not be mined. A general description of the blast area is also recommended, (i.e. - 10 mi. south and 5 mi. east of Nowhere, Wyoming).

(iii). Blasting Times and Dates

List days of the week blasting is to occur, and the time of day. Usually this will be stated as sunrise to sunset. Sunrise and sunset are for the actual mine site and not for the closest city or town. Also state the normal or routine blasting times such as during a shift change or during lunch.

(iv). Blasting Area Access Control

Describe the methods used for controlling access to the blasting area.

(v). Warning Signals

Describe the types of warning signals used at the mine.

(vi). This notice is effective for (list the 12 month period). Republication is required for any revision to this notice (LQD Coal Rules and Regulations, Chapter 6, Section 3).

C. Chapter 6, Section 4(b)(iii)-(vii)

1. Maximum ground vibrations shall not exceed the values approved in the blasting plan. The values in the blasting plan will be determined by one of the following:

   a. At the location of any dwelling or public building the values in paragraph 4(b)(iv) (Coal Rules) will not be exceeded. From 0 to 300 feet the maximum seismograph reading allowed is 1.25 in./sec. and the scaled distance factor for the weight equation is 50. Limitations for the 301 to 5000 feet are 1.0 in./sec. peak particle velocity and a scale distance factor of 55. At 5001 feet and beyond it is 0.75 in./sec. and a scale distance factor of 65.

   b. The scaled distance factor for the weight equation changes for each distance limit listed in paragraph (iv). The permittee may modify the weight equation with adequate seismograph data and Administrator approval.

   c. The graph in Figure 1 (Coal Rules) may be used as an alternative blasting level criteria if the permittee has the frequency of ground vibrations, as well as the particle velocities from seismograph readings for a sufficient number of blasts, and approval is given by the Administrator.

   d. The Administrator may reduce the particle velocity limits or require monitoring to provide protection from damage.

D. Chapter 6, Section 5

The records of each blast shall be retained for three years and be available for inspection by the Administrator or the public on request. The operator should file the blasting records on the mine site rather than at offices off the mine site.

1. Definitions

a. Informal Blasting Records - Those records, or portions thereof, that are filled out by the blaster-in-charge immediately after the blast has occurred. These records may be initial draft copies (i.e. penciled in) which will be sent to a different department to be completed.

b. Formal Blasting Records - These are considered to be the final documents and are the records which are placed in the file for viewing by the inspector and/or public. Included with these records should be a neat sketch of the blasting pattern which outlines the delay pattern.

c. Seismograph Records - If a company is required to use a seismograph for determining peak particle velocity, then the lab results should be filed with the formal blasting records. A "tape" will be sent to a lab for analysis and the results will be returned to the mine.

2. Time Periods

a. Informal blasting records should be available to the inspector shortly after the blast, but no later than the end of the next working day. Operators should use Quarter/Quarter location descriptions to be consistent with the published Public Notice.

b. Depending upon what system a mine uses in compiling the blasting records, all or part of the information may be ready shortly after the blast. Sketches of the blasting pattern and delay system generally take longer to compile. The main emphasis should be placed on having the blaster complete his portion of the records as soon as possible in order to eliminate "forgetting" items.

c. Formal blasting records should be completed and filed no later than five working days after the blast. This would include a neat sketch of the blasting pattern. Seismograph records will generally take two to four weeks to be analyzed and returned.

d. As soon as the seismograph results return to the mine, they should be added to the appropriate blasting record.

e. Since most mines store (file) their records on a month by month basis, the current month's records may not be stored in the same location as the previous month's. This is fine so long as the inspector is able to view the latest records.

f. Time variations will occur from mine to mine. Each mine has a different method for blasting records. The above mentioned time frames should be requested of the operator, but because of unusual circumstances, time variations may exist.

E. Chapter 6, Section 6

1. Chapter 6, Section 6(c)(i)

Blasters must have a minimum of two years blasting related experience to include handling, shot design, loading holes, and typing-in-shots. At least six months of this experience must be hands-on experience on the pattern before a blaster can be eligible to become certified.

2 Chapter 6, Section 6(d)(i)

The DEQ-LQD will provide or approve the required certification training programs. Certification Training will be approximately 24 hours long and cover all aspects of blasting operations.

3.. Chapter 6, Section 6(g)(i)

Certificates may be renewed if the blaster has completed approximately 24 hours of blasting related training in the five year period prior to the expiration of the certificate (this does not include the initial 24 hour training period). Upon application to LQD and submittal of verification of training, a renewal certificate will be issued.